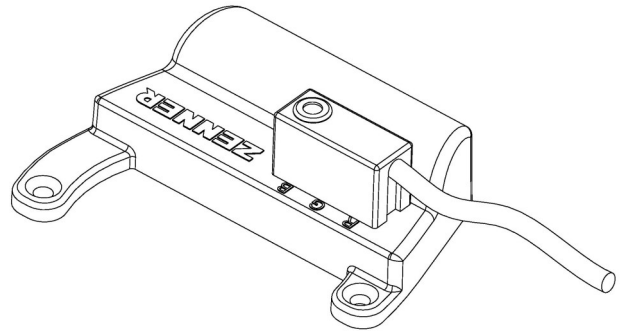


ZENNER ETRU Encoded Type Register Technical Brief

APPLICATION: The Encoded Type Register (ETRU) is designed for use with ZENNER PMN (MTK), PPD (RTK), ZTM, ZTMB and FHZ meter series registers to provide either an encoded or pulse output.

MOUNTING: The ETRU mounts onto the mounts onto the meter shroud using two flat head tamper screws that are provided. A special tool is required to install or remove the ETRU. The ETRU can be removed from the meter without disrupting water service.



MAGNETIC PICKUP: Magnetic pickup from the register pointer ensures reliable positive readings.

SEALED ETRU: The ETRU is completely sealed and approved for pit conditions.

CONSTRUCTION: The housing of the ETRU is constructed of an environmentally safe plastic and resin. Internal construction materials are designed for long-life and reliability. The potting compound provides an impenetrable barrier against water and natural contaminants.

TEMPERATURE: The operating range of the ETRU is -20° C to 76° C (-4° F to 169°F). The water meter should not be exposed to temperatures below freezing.

WIRE CONNECTIONS: The ETRU is provided as a factory pre-wired assembly or an individual unit that can be wired in the field. Length of the connecting wires is limited by the limitations of the connected AMR device.

TAMPER-PROOF FEATURES: Customer removal of the ETRU can be detected by a built in electronic feature of the unit.

ELECTRONCS: The circuit board is completely sealed against moisture and humidity.

OPERATING CHARACTERISTICS: The ETRU has an output every revolution of the pointer. The ETRU generates one count for every rotation of the sweep hand. It will not decrement the count with reverse rotation, and will internally count up to 50 consecutive reverse rotations. This feature is provided to ensure that if a forward rotation is followed by a reverse rotation, the reverse flow will not cause the forward flow to be counted twice. A maximum of 50 consecutive reverse rotations is allowed for.

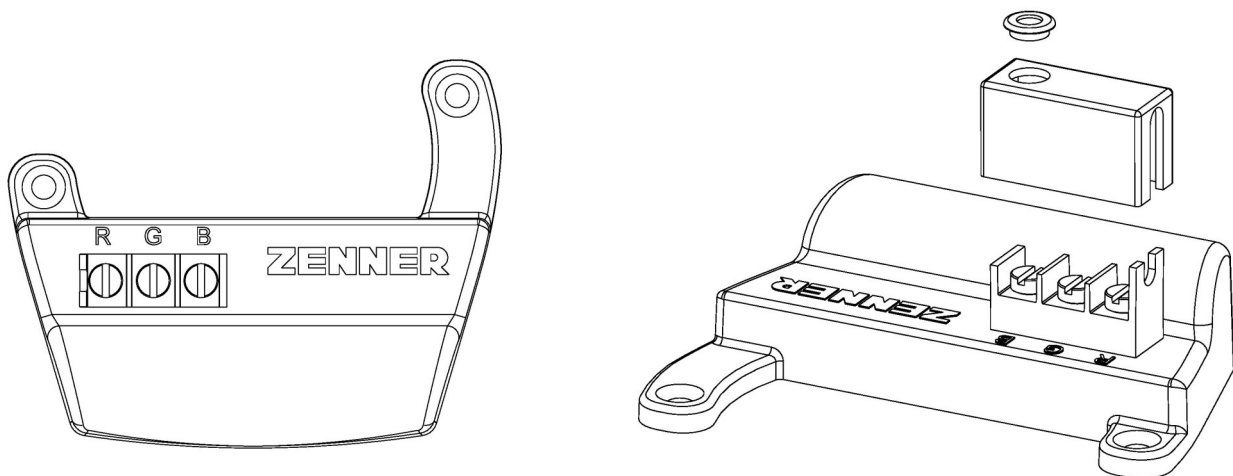
MODE: The ETRU can be configured in one of two modes of operation from the factory. AMR/AMI solution uses three wires. The Digital Switch solution uses two wires.

- **Encoded Mode (Using Three Wires) Sensus Compatible.**

Connections for the ETRU are clearly marked R = Red (Clock), G = Green (Data) and B = Black (Ground) for Encoded Mode Operation.

- **Digital Switch Output Mode (Using Two Wires)**

The digital output is an 'open-collector' transistor between the Green and Black terminals. The black terminal is to be attached to the ground, or most negative terminal of the switch counter and the Green terminal to the input, or most positive terminal of the switch counter. The maximum current that the ETRU output can switch is 20mA. The active signal is on for 9ms.



Specifications

Terminals	Three
Weight	3 oz.
Temperature	-20° C to 76° C (-4° F to 169°F)
Signal Output	Industry Standard ASCII Format or Digital Output
Signal Type	Two wire asynchronous for touch Solutions Three wire synchronous for AMR Solutions
Power Source	Internal battery with 15 plus years lifetime